REMARKS

Claims 1-118 are now pending in the application with claims 2-33 having been allowed and claims 34-118 having been withdrawn. The claims remain unchanged from the prior amendment. The Examiner is respectfully requested to reconsider and withdraw the rejection in view of the remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claim 1 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Chae in the article entitled, "A Protected Optical Star-Shaped Ring Network Using an N x N Arrayed Waveguide Grating and Incoherent Light Sources." This rejection is respectfully traversed.

As will be described below in detail, the applicants believe that the invention as recited in current Claim 1 (hereinafter referred to as "the present invention") would not have been obvious from Chae et al.

The Examiner admits that "Chae et al do not disclose that in order to form at least a first logical-ring transmission path where an optical signal transmitted from one communication node circulates in a clockwise direction and returns to the one communication terminal via other communication nodes" (page 3, second paragraph of the Office Action).

However, the Examiner asserts as follows:

> As shown in Fig. 2 of Chae et al, the nodes are connected in a circular fashion forming a ring. Chae et al provides connection in a ring where the signal transmitted from one node is circulated around the ring and back (see Fig. 2), therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to modify the contents of the tables by means

> of programming or other methods, such that the signal transmitted from one node is circulated back to that via other nodes in a clockwise direction. (Page 3, last paragraph, to page 4, first paragraph, and page 4, last paragraph, to page 5, first paragraph, of the Office Action.)

The applicants disagree. Thus, the applicants refute the above-described Examiner's assertion with reference to enclosed FIG. A to FIG. F and Table I to Table IV. FIG. A and FIG. C show connections for an N×N AWG of Chae et al. which are used for forming ring networks. FIG. B, FIG. D, FIG. E, and FIG. F show ring networks formed by Chae et al. Table I to Table IV show the wavelengths used between ports of the N×N AWG, similar to the tables used in the response to the previous Office Action.

In order to change a ring network in which optical signals circulate in a counterclockwise direction (hereinafter referred to as "a counterclockwise ring network") to a ring network in which optical signals circulate in a clockwise direction (hereinafter referred to as "a clockwise ring network"), it is necessary for Chae et al. to physically change the connections of optical fibers (i.e., to attach and detach the optical fibers). Contrary to the Examiner's assertion, it is impossible for Chae et al. to realize a clockwise ring network by "modifying the contents of the tables by means of programming or other methods."

For example, we assume a ring network realized by a connection from port A2 to port A3 shown in FIG. 1 of Chae et al. (see also FIG. A, FIG. B, and Table I). In this case, in order to change the direction of a connection between Node 1 and Node 8 from a counterclockwise direction (a connection from Node 1 to Node 8) to a clockwise direction (a connection from Node 8 to Node 1), it is necessary to physically change the structure of the wire center so as to have a connection from port A2 to port A1 (see FIG.

C, FIG. D, and Table II).

Generalizing this discussion, it is necessary for Chae et al. to provide connections from port An to port A(n-1), where n is an integer greater than or equal to 2 and smaller than or equal to 8.

Similar arguments can apply to another connection (i.e., the connection from port A5 through a switch to one of port A6 to port A8; hereinafter referred to as "A5-switch-A6" and so forth"). For example, when a counterclockwise ring network realized by the connection A5-switch-A6 (see FIG. E and Table III) is changed to a clockwise ring network, it is necessary to change the connection A5-switch-A6 to the connection A5-switch-A4 (see FIG. F and Table IV). However, since a monitor is connected to port A4, it is impossible for Chae et al. to select port A4.

In this way, the structure of the wire center of Chae et al. merely shows connections from port An to port A(n+1). FIG. 1 of Chae et al. does not show connections from port An to port A(n-1), and such connections are neither disclosed nor suggested in the text of Chae et al. This is a main factor which makes it impossible to configure a clockwise ring network in Chae et al.

If it is possible for Chae et al. to change the topology of the network by "modifying the contents of the tables by means of programming or other methods" as asserted by the Examiner, this means that Chae et al. do not intend to change the connections of optical fibers which are physically connected to the NxN AWG.

Moreover, if the connection from port A2 to port A3 is changed to the connection from port A2 to port A1 so as to realize a clockwise ring network in Chae et al., all the connections between communication nodes are disconnected while a change in

connection is in progress. Similarly, if the monitor is removed from port A4 and then the connection is changed to the connection from port A5 to port A4 so as to realize a clockwise ring network in Chae et al., a network monitoring function becomes unavailable while a change in connection is in progress and all the connections between communication nodes are disconnected during the change.

In this way, in order to configure a clockwise ring network, Chae et al. cause the aforementioned problems, and hence it is obvious that Chae et al. do not intend to realize a clockwise ring network. In other words, it is reasonable to understand that Chae et al. exclude a clockwise ring network and regard the clockwise ring network as a structure which is outside the range that can be achieved by Chae et al. Therefore, it is difficult for a person having ordinary skill in the art to anticipate from Chae et al. a clockwise ring network realized by a physical change of the connections of optical fibers, which is not intended by Chae et al.

In contrast, in the present invention, in order to form a first logical-ring transmission path (i.e., a clockwise ring network) or both the first logical-ring transmission path and a second logical-ring transmission path (i.e., a counterclockwise ring network), "a correlation of wavelengths for connecting between the input ports and the output ports of the N×N wavelength path establishment circuit, wavelengths of optical signals output from the respective communication nodes, and connections between the input ports and the output ports of the N×N wavelength path establishment circuit, and the respective communication nodes are set."

As a result, it is possible for the present invention to form a clockwise ring network, a counter clockwise ring network, and both of these ring networks simultaneously by

simply setting/changing the wavelengths without changing the physical connections of optical fibers.

Please note that Claim 1 recites that "... connections between the input ports and the output ports of the N×N wavelength path establishment circuit, and the respective communication nodes are set" (i.e., connections between the N×N wavelength path establishment circuit and the communication nodes). This claimed limitation is different from the structure of Chae et al. which changes the connections of optical fibers between ports of the N×N AWG.

As described above, the structure of the present invention is different from that of Chae et al., and the present invention provides the foregoing advantages that cannot be obtained by Chae et al. Therefore, the present invention would not have been obvious from Chae et al. at the time the present invention was made.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw the presently outstanding rejection. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this response is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: October 30, 2008

By: _____
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GAS/dec

FIG. A

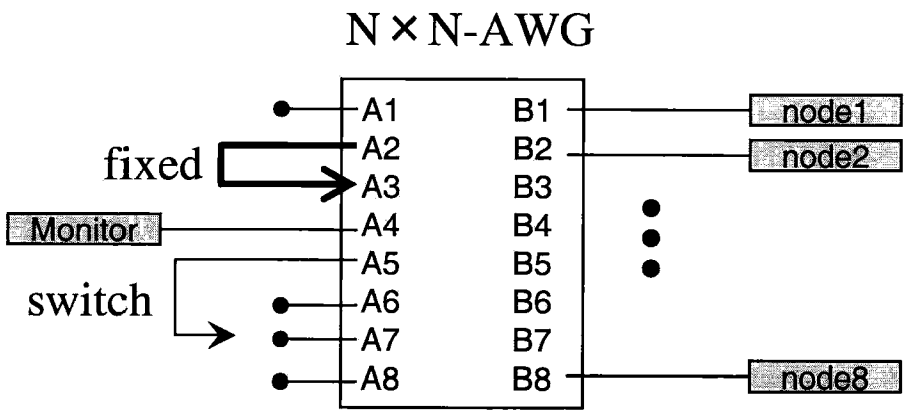
N × N-AWG
A1
A2
A3
A4
A5
A6
A7
A8
B1
B2
B3
B4
B5
B6
B7
B8
fixed
Monitor
switch
node1
node2
node8

FIG. B

Ring Network by A2-A3 Wavelength Routing

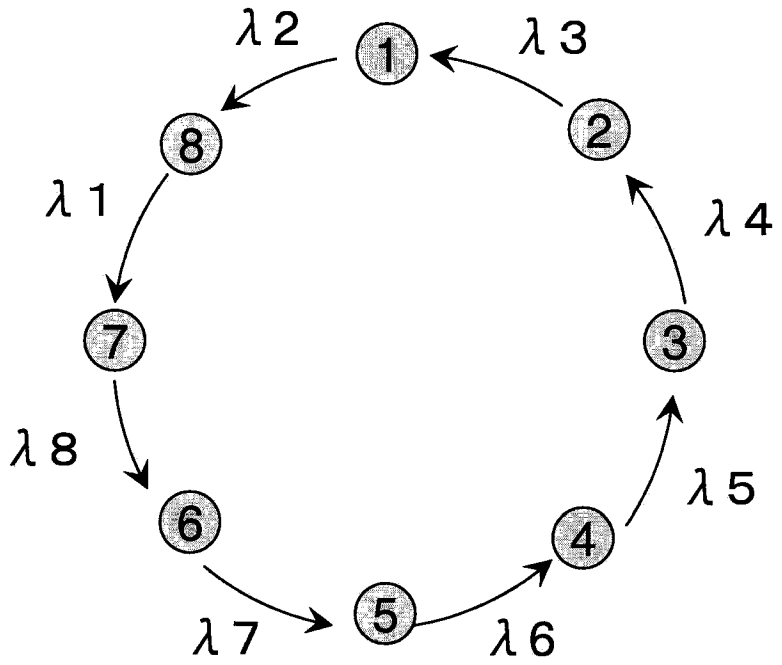

Table I

A2-A3 Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1								
A2	λ 2	λ 3	λ 4	λ 5	λ 6	λ 7	λ 8	λ 1
A3	λ 3	λ 4	λ 5	λ 6	λ 7	λ 8	λ 1	λ 2
A4								
A5								
A6								
A7								
A8								

(b)

Start Node		Used Wavelength		Arrival Node
N1	→	λ 2	→	N8
N2	→	λ 3	→	N1
N3	→	λ 4	→	N2
N4	→	λ 5	→	N3
N5	→	λ 6	→	N4
N6	→	λ 7	→	N5
N7	→	λ 8	→	N6
N8	→	λ 1	→	N7

FIG. C

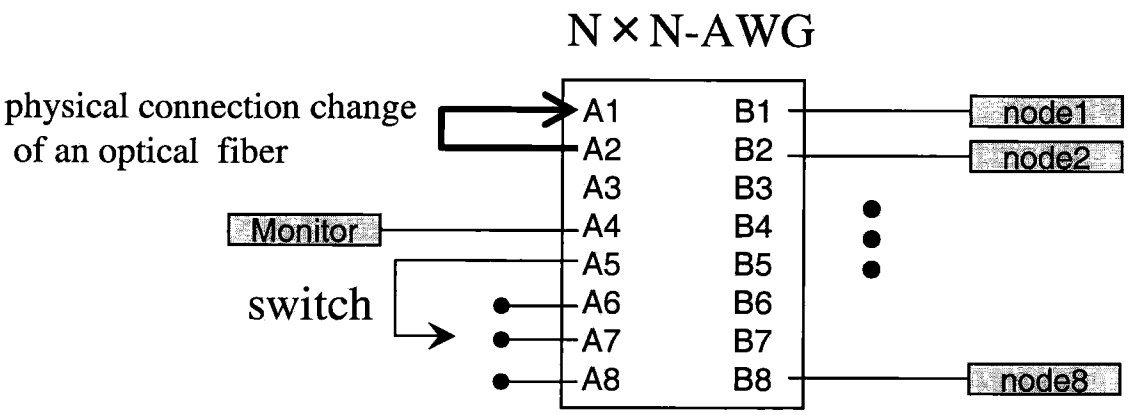
N × N-AWG
physical connection change
of an optical fiber
Monitor
switch
A1
A2
A3
A4
A5
A6
A7
A8
B1
B2
B3
B4
B5
B6
B7
B8
node1
node2
node8

FIG. D

Ring Network by A2-A1 Wavelength Routing

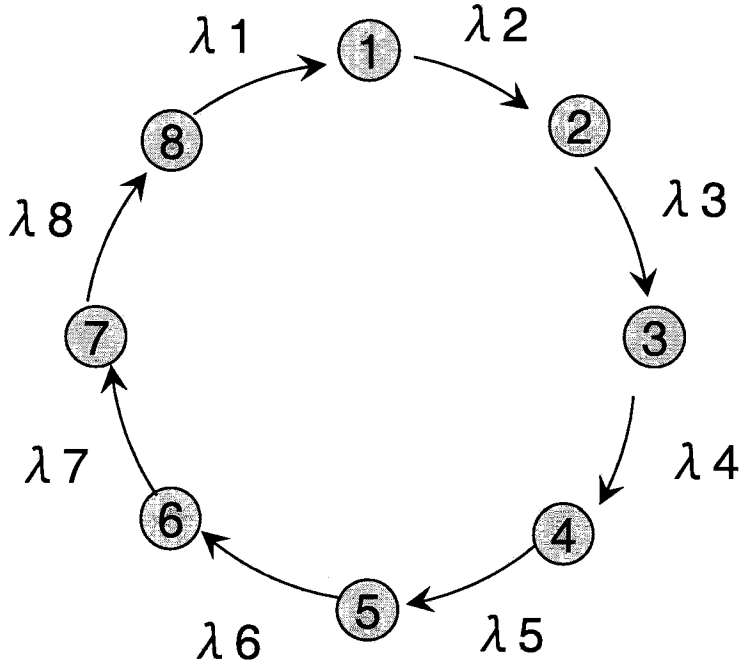

Table II

A2-A1 Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1	λ1	λ2	λ3	λ4	λ5	λ6	λ7	λ8
A2	λ2	λ3	λ4	λ5	λ6	λ7	λ8	λ1
A3								
A4								
A5								
A6								
A7								
A8								

(b)

Start Node		Used Wavelength		Arrival Node
N1	→	λ2	→	N2
N2	→	λ3	→	N3
N3	→	λ4	→	N4
N4	→	λ5	→	N5
N5	→	λ6	→	N6
N6	→	λ7	→	N7
N7	→	λ8	→	N8
N8	→	λ1	→	N1

FIG. E

Ring Network by A5-switch-A6 Wavelength Routing

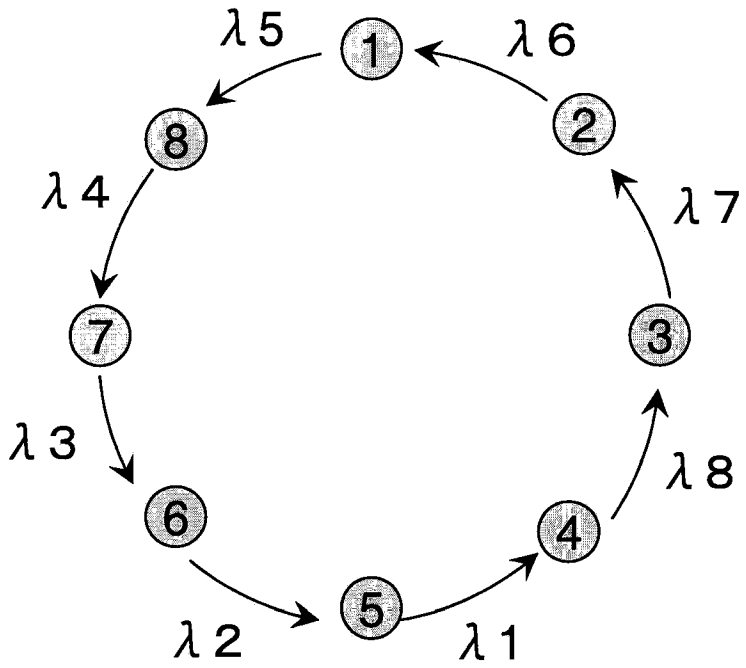

Table III

A5-switch-A6 Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1								
A2								
A3								
A4								
A5	λ5	λ6	λ7	λ8	λ1	λ2	λ3	λ4
A6	λ6	λ7	λ8	λ1	λ2	λ3	λ4	λ5
A7								
A8								

(b)

Start Node		Used Wavelength		Arrival Node
N1	→	λ5	→	N8
N2	→	λ6	→	N1
N3	→	λ7	→	N2
N4	→	λ8	→	N3
N5	→	λ1	→	N4
N6	→	λ2	→	N5
N7	→	λ3	→	N6
N8	→	λ4	→	N7

FIG. F

Ring Network by A5-switch-A4 Wavelength Routing

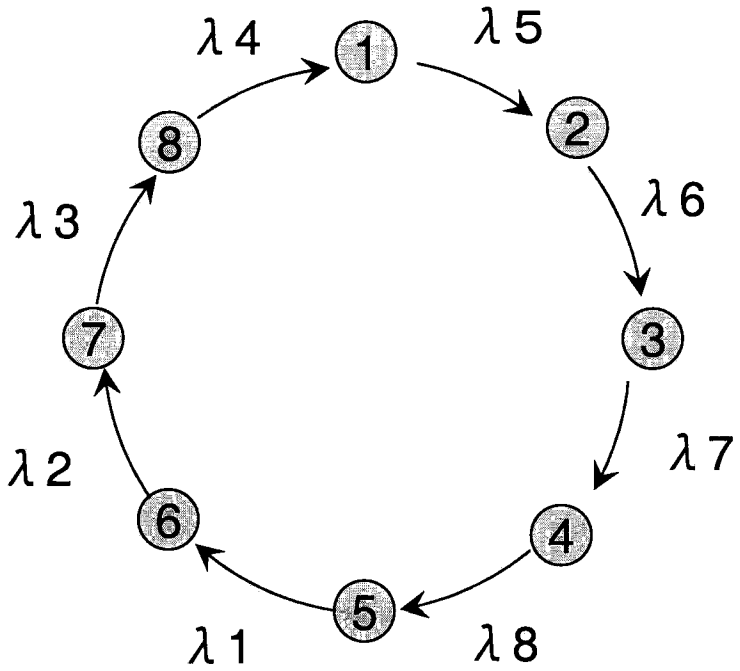

Table IV

A5-switch-A4 Wavelength Routing

(a)

	B1	B2	B3	B4	B5	B6	B7	B8
A1								
A2								
A3								
A4	λ4	λ5	λ6	λ7	λ8	λ1	λ2	λ3
A5	λ5	λ6	λ7	λ8	λ1	λ2	λ3	λ4
A6								
A7								
A8								

(b)

Start Node		Used Wavelength		Arrival Node
N1	→	λ5	→	N2
N2	→	λ6	→	N3
N3	→	λ7	→	N4
N4	→	λ8	→	N5
N5	→	λ1	→	N6
N6	→	λ2	→	N7
N7	→	λ3	→	N8
N8	→	λ4	→	N1